

REMARKS

The specification has been amended to correct various typographical errors. In particular, the term "than" at page 16, line 22 is incorrect and has been replaced with the term "then". In addition, the reference numeral on page 17 at the end of line 13 is incorrect and has been replaced with reference numeral "116". Lastly, the reference numeral "640" at page 17, line 22 is incorrect and has been replaced with "650" to be consistent with the corresponding reference numerals in Fig. 6. No new matter has been added. Therefore, Applicants respectfully request that these corrections be entered.

The claims have also been amended to correct a misspelling. Claim 6 has been amended to replace the misspelled term "programed" with the term "programmed." No new matter has been added. Therefore, Applicants respectfully request that this amendment be entered.

Claims 1-16 are pending, of which Claims 1, 6, 11, and 16 are independent. Claims 1-16 were rejected. For the reasons discussed below, all claims are now in condition for allowance. Reconsideration is respectfully requested.

Claim objections

Claim 5 was objected to based on informalities. The Examiner noted that the phrase "causing a purge valve to comprises delivering" recited in claim 5 was confusing. The Applicants thank the Examiner for pointing out this error. In response to the Examiner's objection, claim 5 is amended to replace the phrase "causing a purge valve to" with the phrase "responding to a temperature that is above a warmup set point" which is consistent with the terminology used in now amended independent claim 1 from which claim 5 depends. Acceptance and reconsideration are respectfully requested.

35 U.S.C. 102 Rejection

Claims 1-16 were rejected under 35 U.S.C. 102(b) based on U.S. Patent No. 6,327,863 to Yamartino et al. These rejections are traversed as applied to the amended claims. Reconsideration is respectfully requested.

Preferred embodiments of the invention relate to techniques for the prevention of safety hazards arising from an unsafe condition in a cryopump. An unsafe condition can, for example, be a power failure, faulty temperature sensing diode in the cryopump, or temperature of the cryopump exceeding the threshold temperature level. Multiple valves are controlled using local electronics during unsafe conditions.

Figure 6 is a flow diagram describing a process according to Applicants' invention. As shown, the system 120 determines at step 630 that the cryopump temperature is below an operational setpoint, such as 18K. At step 640, the system 120 sets a flag or an identifier, which indicates that the cryopump has gone below the operational set point. At step 650, the system 120 determines that the temperature of the cryopump has risen to a warmup set point such as 35K. If the cryopump 104 warms up to a value greater than this parameter, the cryopurge valve and the exhaust purge valve open and the gate valve is closed as described in step 660. During this time, at step 670, the host controller 106 is unable to control the valves. This safe purge continues for a certain time period, such as five minutes, at step 680. After the five minutes has elapsed, at step 690, the host controller 106 regains control of the valves.

In contrast, Yamartino et al. disclose a method of controlling gate valve 14 such that the gate valve 14 is automatically locked closed when an unsafe condition arises. Yamartino et al., col. 6, line 55 through col. 7, line 33. Yamartino et al. also disclose opening a cryo-purge valve. However, Yamartino et al. do not disclose controlling an exhaust purge valve coupled to an exhaust line of the cryopump such that the exhaust purge valve opens.

The claims have been amended to make this distinction clear. In particular, the claim limitation of claims 2, 7, and 12, "causing an exhaust purge valve coupled to an exhaust line of the cryopump to open," has been incorporated into independent claims 1, 6, 11, and 16. Dependent claims 2, 5, 7, 10, 12, and 15 have also been amended to be consistent with the amendments to independent claims 1, 6, 11, and 16.

Since Yamartino et al. do not disclose each and every claim limitation of now amended independent claims 1, 6, 11, and 16 ("directing an exhaust purge valve coupled to an exhaust line of the cryopump to open"), reconsideration of the rejection of independent claims 1, 6, 11, and 16 and their respective dependents, claims 2-5, 7-10, 12-15, under section 102(b) is respectfully requested.

Information Disclosure Statement


Two Supplemental Information Disclosure Statements (SIDS) were filed on August 6, 2004 and November 9, 2004. Entry of these SIDSs is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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